

Table 1. Suggested microbiological samples for surveillance of multidrug-resistant organisms in Spain (SEIMC)

Multidrug-resistant organisms	Rectal	Perineal	Pharyngeal	Nasal	Tracheal aspirate	Wounds	Urine
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	-	+	+++	++++	+++	+++	++
Glycopeptide-resistant <i>Enterococcus</i> (VRE)	++++	++++	-	-	-	+++	++
Multidrug-resistant <i>Enterobacteriaceae</i>	++++	++++	+	-	-	+	+++
Multidrug-resistant <i>Acinetobacter</i> sp.	++++	++++	++++	-	++++	+++	+++
Multidrug-resistant <i>Pseudomonas</i> sp.	+++	+++	++++	-	++++	+++	+++

Table 2. CPE transmission from index cases with and without respiratory colonization/infection

Result	Negative respiratory sample	Positive respiratory sample	TOTAL
Negative contact patients	89.8% (44)	77.1% (27)	84.5% (71)
Positive contact patients	10.2% (5)	22.9% (8)	15.5% (13)
TOTAL	100.0% (49)	100.0% (35)	100.0% (84)

a patient colonized or infected with a CPE (index case) for at least 24 hours were screened for CPE carriage. The microbiological screening was performed with conventional culture or polymerase chain reaction (PCR) to identified possible CPE patient-to-patient transmission. The screening test included several samples: rectal swab, perineal swab, wound or drainage swab, and low respiratory tract sample. **Results:** Active screening for CPE carriage was performed in 84 contact patients. Men represent 57.1% of the sample, and the mean age was 78.5 years (men, 68.0 years and women, 80.8 years), with significant differences between sexes (-12.9 ; 95% CI, -19.6 to -6.1). The major group of cases (86.9%) were hospitalized in medical wards. Transmission confirmed by PCR occurred in 13 (15.5%) of 84 contact patients, after a mean exposure to the index case of 13.3 days. No significant differences were detected in terms of mean exposure to index cases between those contact patients who result negative and those who result positive. The 35 index cases (41.7%) tested positive for CPE on the respiratory sample, and exposure to

them led to 8 positive contact patients (61.5%). **Conclusions:** CPE transmission in a tertiary-care hospital occurred frequently. The spread rate is even higher when CPE is present at the respiratory level. Understanding the mode of spread is important for designing effective control measures and adding a respiratory sample to CPE screening could be a key consideration.

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Important but Impractical: Hand Hygiene Among Operating Room Anesthesia Providers

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Background: Use of the WHO 5 Moments of Hand Hygiene (HH) by operating room (OR) anesthesia personnel has been called by some logistically unfeasible, despite evidence that HH can reduce patients' risk of pathogen acquisition. We developed and implemented a set of 7 moments based on WHO guidance (Fig 1) with high adherence. We conducted this study 6 months later to determine whether the improvement was sustained. In addition, we sought to understand practices, beliefs, barriers, and perceptions among anesthesia providers regarding HH. **Methods:** We measured HH adherence by direct observation using locally developed 7 moments tailored to the anesthesia workflow during June–August 2019. Adherence was defined as the percentage of observed HH performed when a moment occurred. We used



Fig. 1.

the theory of planned behavior (TPB) as a framework to conduct 11 individual interviews (8 attending anesthesiologists and 3 certified nurse anesthetists) with a semistructured instrument that included Likert scale and open-ended questions. Interview transcripts were reviewed and a codebook of themes was created through inductive thematic analysis. Resultant themes and Likert scale averages were grouped by the 3 key TPB variables. **Results:** In total, 294 HH moments were observed for 50 anesthesia providers during 36 cases. The average HH adherence was 21.1% with the highest adherence moment being “after patient contact” (61.7%). Interview participants stated universally that HH was important for patient care, but acknowledged barriers to performance. Barriers cited included interruption in workflow, a lack of evidence, lack of clarity of HH standard, and limited availability of product. **Conclusions:** Adherence to the 7 moments of HH for anesthesia providers was not sustained after 6 months. Providers identified numerous barriers to HH, including a lack of knowledge of a standard, as reasons for suboptimal adherence. These data suggest future interventions could be designed to address gaps in knowledge and remove barriers to improve HH adherence among OR anesthesia providers.

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Improved Postoperative Outcomes By Utilizing A Comprehensive Perioperative Surgical Site Infection (SSI) Reduction Bundle

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Background: Surgical site infections (SSIs) can be attributed to increased patient morbidity and mortality, prolonged hospital stays, and overall increased healthcare costs. The Surgical Care Improvement Project (SCIP) was implemented in 2002 but has made limited impact on SSI rates across our facilities, which has led to the creation of a bundled approach of current evidence-based strategies. **Methods:** In January 2019, a comprehensive SSI prevention bundle of strategies was implemented across a multihospital health system. The bundle was comprised of 8 interventions focusing on the preoperative, intraoperative, and postoperative continuum of care, and refining documentation in the electronic medical record. From January to September 2019 (preintervention period), data were collected from 7,163 adult inpatient and observation elective patients undergoing colon surgery (COLO), abdominal hysterectomy (HYST), hip arthroplasty (HPRO), knee arthroplasty (KPRO), and cardiac bypass graft (CBGB/CBGC). The preintervention period for SSI standardized infection ratios (SIRs) and retrospective review of process measures was set as January–December 2018 (postintervention period). Each process measure had outlined targets along with primary outcome measures of overall SSI SIRs and SIRs for each of the 5 reported procedure categories. SSIs were validated to meet CDC and NHSN surveillance case definitions. Secondary outcomes evaluated included length of stay (LOS), readmission rates, and mortality. **Results:** Overall SIR for all 5 monitored surgical categories decreased by 5% to 1.131 from January to

September 2019, compared to SIR of 1.190 in 2018. Hip and knee arthroplasties demonstrated 40% and 38% reductions after the intervention, respectively. Completion of 7 or 8 interventions of the SSI bundle were correlated with lower readmission rates ($P = .0488$). When any portion of the bundle was used, this was correlated with shorter LOS ($P < .0001$). Adherence to standardized antimicrobial prophylaxis was associated with decreased mortality ($P = .017$), for all 5 surgical categories.

Conclusions: With the implementation of a focused SSI reduction bundle, our institution has realized reductions in surgical readmissions, length of stay, and mortality. Additionally, SSI rates in certain procedure categories have shown marked improvement. The initial success of this bundle has garnered development of additional procedure focused supplemental strategies for the future year.

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Improvement of Infection Prevention and Control Practices Using Quality Improvement Approach in Two Model Hospitals in Kenya

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Background: Little is known about how best to implement infection prevention and control programs in low-resource settings. The quality improvement approach using plan-do-study-act (PDSA) cycles provides a framework for data-driven infection prevention and control implementation. We used quality improvement techniques and training to improve infection prevention and control practices in 2 model hospitals in Kenya. **Methods:** The 2 hospitals were chosen by the Kenya Ministry of Health for capacity building on infection prevention and control. At each site, the project team (the University of Washington International Training for Education and Training in Health, Ministry of Health, and Centers for Disease Control) conducted infection prevention and control training to infection prevention and control committee members. Infection prevention and control quality improvement activities were introduced in a staggered manner, focusing on hand hygiene and waste management practices. For hand hygiene, the project team's technical assistance focused on facility hand hygiene infrastructure, hand hygiene practice adherence, hand hygiene supply quantification, and monitoring and evaluation using WHO hand hygiene audit tools. Waste management technical assistance focused on availability of policy, guidelines, equipment and supplies, waste segregation, waste quantification, and monitoring and evaluation using a data collection tool customized based on previously published tools. Regular interactive video conference sessions between the project team and the sites